Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): A power plant system that can use a fuel that is a gas at ambient temperature and pressure, comprising:

at least one power plant;

at least one fuel storage container; and

at least one expander that can receive fuel from the fuel storage container at a first pressure and provide the fuel to the power plant at a second pressure that is lower than the first pressure.

Claim 2 (original): The system according to claim 1, wherein the power plant comprises a fuel cell.

Claim 3 (withdrawn): The system according to claim 1, wherein the power plant comprises a combustion engine.

Claim 4 (original): The system according to claim 1, wherein the fuel storage container is selected from a pressure vessel for holding compressed gas, a pressure vessel for a bed of a gas sorbent, and a dewar for containing a liquefied gas.

Claim 5 (original): The system according to claim 2, wherein the fuel storage container holds compressed hydrogen gas or cryogenic liquid hydrogen.

Claim 6 (original): The system according to claim 2, wherein the expander is coupled to at least one device selected from a compressor, a pump, an adsorber rotor, or a vehicle propulsion device.

Claim 7 (original): The system according to claim 2, wherein the fuel storage container holds cryogenic liquid hydrogen, the power plant system further comprising at least one heat exchanger containing a working fluid, the heat exchanger being juxtaposed with the fuel storage container such that heat can be transferred from the working fluid to the fuel in the fuel storage container.

Claim 8 (original): The system according to claim 2, further comprising a first conduit fluidly communicating between the expander and the fuel cell for carrying the fuel, wherein at least a portion of the first conduit is disposed within at least one heat exchanger such that the fuel is a coolant.

Claim 9 (original): The system according to claim 1, wherein the fuel comprises hydrogen, methane, natural gas, or propane.

Claim 10 (withdrawn): A power plant system that can use a fuel that is a gas at ambient temperature pressure, comprising:

at least one power plant;

at least one fuel storage container;

a first conduit fluidly coupling the fuel storage container and the power plant for delivering fuel from the fuel storage container to the power plant; and

at least one regenerative thermodynamic cycle engine thermally coupled to the first conduit such that heat may be exchanged between the fuel and a working fluid for the regenerative thermodynamic cycle engine.

Claim 11 (withdrawn): The system according to claim 10, wherein the power plant comprises a fuel cell.

Claim 12 (withdrawn): The system according to claim 10, wherein the power plant comprises a combustion engine.

Claim 13 (withdrawn): The system according to claim 10, wherein the fuel storage container is selected from a pressure vessel for holding compressed gas, a pressure vessel for a bed of a gas sorbent, and a dewar for containing a liquefied gas.

Claim 14 (withdrawn): The system according to claim 11, wherein the fuel storage container holds compressed hydrogen gas or cryogenic liquid hydrogen.

Claim 15 (withdrawn): The system according to claim 11, wherein the regenerative thermodynamic cycle engine is coupled to at least one device selected from a compressor, a pump, an adsorber rotor, or a vehicle propulsion device.

Claim 16 (withdrawn): The system according to claim 15, wherein the regenerative thermodynamic cycle engine comprises a Stirling engine.

Claim 17 (withdrawn): The system according to claim 16, further comprising at least one expander fluidly coupled to the first conduit between the fuel storage container and the fuel cell such that the expander can receive fuel from the fuel storage container at a first pressure and provide the fuel to the fuel cell at a second pressure that is lower than the first pressure.

Claim 18 (withdrawn): The system according to claim 17, further comprising:

at least one first heat exchanger fluidly coupled to the first conduit between the expander and the fuel cell;

at least one pressure swing adsorption module defining an inlet that is in fluid communication with a second conduit for carrying an air feed stream;

wherein at least a first portion of the first conduit and at least a portion of the second conduit are disposed within the first heat exchanger such that heat can be transferred from the air feed stream to the fuel.

Claim 19 (withdrawn): The system according to claim 18, further comprising a third conduit for carrying the working fluid of the Stirling engine, at least a first portion of the third conduit being disposed within the first heat exchanger such that heat can be transferred from the air feed stream to the working fluid of the Stirling engine.

Claim 20 (withdrawn): The system according to claim 19, further comprising a second heat exchanger housing at least a second portion of the first conduit and at least a second portion of the third conduit such that heat can be transferred from the working fluid of the Stirling engine to the fuel.

Claim 21 (withdrawn): The system according to claim 16, further comprising:

a second conduit for carrying an exhaust gas stream from the fuel cell;

a third conduit for carrying the working fluid of the Stirling engine; and

a heat exchanger housing at least a portion of the second conduit and at least a portion of the third conduit such that heat may be transferred from the exhaust gas stream to the working fluid of the Stirling engine.

Claim 22 (withdrawn): The system according to claim 21, wherein the fuel comprises hydrogen, methane, natural gas, or propane.

Claim 23 (withdrawn): An electrical current generating system, comprising:

at least one fuel cell;

a fuel storage system; and

means for converting energy from release of fuel from the fuel storage system into mechanical power, heat transfer, or mechanical power and heat transfer.

Claim 24 (withdrawn): The system according to claim 23, wherein the means for converting energy comprises at least one device selected from an expander, a heat exchanger or a regenerative thermodynamic cycle engine.

Claim 25 (withdrawn): The system according to claim 24, further comprising at least one gas delivery system that can deliver a gas to the fuel cell, the gas delivery system including at least one mechanically-powered apparatus mechanically coupled to at least one of the expander or regenerative thermodynamic cycle engine.

Claim 26 (withdrawn): The system according to claim 24, further comprising at least one gas delivery system that can deliver a gas to the fuel cell via a conduit that is thermally coupled to at least one heat exchanger such that heat can be exchanged between the gas and the fuel.

Claim 27 (original): An electrical current generating system, comprising:

at least one fuel cell;

at least one hydrogen storage system;

at least one expander that can receive hydrogen from the hydrogen storage system at a first pressure and provide the hydrogen to the fuel cell at a second pressure that is lower than the first pressure; and

at least one oxidant gas delivery system that can produce oxidant-enriched gas for delivery to the fuel cell and that includes at least one device that is coupled to the expander.

Claim 28 (original): The system according to claim 27, wherein the oxidant gas delivery system comprises an oxygen gas delivery system that includes a pressure swing adsorption module and the device coupled to the expander is selected from a compressor, vacuum pump, rotary adsorbent bed and rotary adsorber valve.

Claim 29 (original): The system according to claim 28, further comprising:

a first conduit for carrying an air feed stream to the pressure swing adsorption module;

a second conduit for carrying the hydrogen from the expander to the fuel cell; and

a heat exchanger housing at least a portion of the first conduit and at least a portion of the second conduit such that heat can be transferred from the air feed stream to the hydrogen.

Claim 30 (original): The system according to claim 27, wherein the hydrogen storage system comprises at least one container selected from a pressure vessel for holding compressed hydrogen gas, a pressure vessel for a bed of a hydrogen sorbent, and a dewar for containing liquid hydrogen.

Claim 31 (original): The system according to claim 28, wherein the pressure swing adsorption module comprises a rotary pressure swing adsorption module.

Claim 32 (original): The system according to claim 28, wherein the hydrogen storage system holds cryogenic liquid hydrogen, the electrical current generating system further comprising:

a first conduit for carrying an air feed stream to the pressure swing adsorption module; and

at least one heat exchanger juxtaposed with the hydrogen storage system such that heat can be transferred from the air feed stream to the cryogenic liquid hydrogen.

Claim 33 (original): The system according to claim 27, wherein the expander comprises a multi-stage expander.

Claim 34 (original): The system according to claim 27, wherein the expander comprises a positive displacement expander or an impulse turbine.

Claim 35 (withdrawn): An electrical current generating system, comprising:

at least one fuel cell;

at least one hydrogen storage system;

at least one oxidant gas delivery system that can produce oxidant-enriched gas for delivery to the fuel cell;

a first conduit for carrying an air feed stream to the oxidant gas delivery system; and

at least one Stirling engine thermally coupled to the first conduit such that heat may be exchanged between the air feed stream and a working fluid for the Stirling engine.

Claim 36 (withdrawn): The system according to claim 35, wherein the oxidant gas delivery system comprises an oxygen gas delivery system that includes a pressure swing adsorption system having at least one device coupled to the Stirling engine.

Claim 37 (withdrawn): The system according to claim 36, wherein the device coupled to the Stirling engine is selected from a compressor, vacuum pump, rotary adsorbent bed and rotary adsorber valve.

Claim 38 (withdrawn): The system according to claim 35, wherein the hydrogen storage system comprises at least one container selected from a pressure vessel for holding compressed hydrogen gas, a pressure vessel for a bed of a hydrogen sorbent, and a dewar for containing liquid hydrogen.

Claim 39 (withdrawn): The system according to claim 36, wherein the pressure swing adsorption module comprises a rotary pressure swing adsorption module.

Claim 40 (withdrawn): The system according to claim 35, further comprising at least one expander that can receive hydrogen from the hydrogen storage system at a first pressure and provide the hydrogen to the fuel cell at a second pressure that is lower than the first pressure.

Claim 41 (withdrawn): The system according to claim 40, wherein the expander comprises a multi-stage expander.

Claim 42 (withdrawn): The system according to claim 40, wherein the expander comprises a positive displacement expander or an impulse turbine.

Claim 43 (withdrawn): The system according to claim 35, further comprising:

a second conduit for carrying hydrogen from the hydrogen storage system to the fuel cell;

a third conduit for carrying the working fluid of the Stirling engine; and

a heat exchanger housing at least a portion of the second conduit and at least a portion of the third conduit such that heat may be transferred from the hydrogen to the working fluid of the Stirling engine.

Claim 44 (withdrawn): The system according to claim 40, further comprising:

a second conduit for carrying hydrogen from the hydrogen storage system to the expander;

a third conduit for carrying the working fluid of the Stirling engine;

a fourth conduit for carrying hydrogen from the expander to the fuel cell;

a first heat exchanger housing at least a portion of the second conduit and at least a first portion of the third conduit such that heat may be transferred from the hydrogen to the working fluid of the Stirling engine; and

a second heat exchanger housing at least a portion of the first conduit, at least a second portion of the third conduit and at least a portion of the fourth conduit such that heat may be transferred from the air feed stream to the hydrogen and the working fluid of the Stirling engine.

Claim 45 (withdrawn): The system according to claim 35, further comprising:

a second conduit for carrying hydrogen from the hydrogen storage system to the expander; and

an orthohydrogen-parahydrogen catalyst bed fluidly coupled to the second conduit.

Claim 46 (original): The system according to claim 27, further comprising:

a first conduit for carrying an air feed stream to the oxidant gas delivery system;

a second conduit for carrying the air feed stream to the oxidant gas delivery system;

a third conduit for carrying hydrogen from the hydrogen storage system to the fuel cell;

a fourth conduit for carrying hydrogen from the hydrogen storage system to the fuel cell;

a first heat exchanger housing at least a portion of the first conduit and at least a portion of the third conduit for transferring heat from the air feed stream to the hydrogen;

a second heat exchanger housing at least a portion of the second conduit and at least a portion of the fourth conduit for transferring heat from the air feed stream to the hydrogen;

a first feed air shutoff valve fluidly coupled to the first conduit between the first heat exchanger and the oxidant gas delivery system;

a second feed air shutoff valve fluidly coupled to the second conduit between the second heat exchanger and the oxidant gas delivery system;

a first feed air exhaust valve fluidly coupled to the first conduit between the first heat exchanger and the oxidant gas delivery system;

a second feed air exhaust valve fluidly coupled to the second conduit between the second heat exchanger and the oxidant gas delivery system;

a first hydrogen shutoff valve fluidly coupled to the third conduit between the hydrogen storage system and the first heat exchanger; and

a second hydrogen shutoff valve fluidly coupled to the fourth conduit between the hydrogen storage system and the second heat exchanger.

Claims 47-69 (cancelled)

Claim 70 (original): The system according to claim 4, wherein the fuel storage container comprises a pressure vessel that includes a bed of a physical adsorbent.

Claim 71 (original): The system according to claim 70, wherein the adsorbent is selected from a carbon material and a zeolite.

Claim 72 (original): The system according to claim 4, wherein the fuel comprises hydrogen and the fuel storage container comprises a pressure vessel that includes a bed of hydride forming metal or metallic alloy.

Claim 73 (withdrawn): The system according to claim 10, wherein the working fluid for the regenerative thermodynamic cycle engine is substantially identical to the fuel gas.

Claim 74 (withdrawn): The system according to claim 10, wherein the working fluid for the regenerative thermodynamic cycle engine and the fuel gas comprise hydrogen.

Claim 75 (withdrawn): The system according to claim 13, wherein the fuel storage container comprises a pressure vessel that includes a bed of a physical adsorbent.

Claim 76 (withdrawn): The system according to claim 75, wherein the adsorbent is selected from a carbon material and a zeolite.

Claim 77 (withdrawn): The system according to claim 13, wherein the fuel comprises hydrogen and the fuel storage container comprises a pressure vessel that includes a bed of hydride forming metal or metallic alloy.

Claim 78 (original): The system according to claim 2, further comprising:

a first conduit for carrying an exhaust gas stream from the fuel cell; and

at least one heat exchanger juxtaposed with the fuel storage container such that heat can be transferred from the exhaust gas stream to fuel in the fuel storage container.

Claim 79 (withdrawn): The process according to claim 61, further comprising intermittently transferring heat from the hydrogen stream to the regenerative thermodynamic cycle engine working fluid.

Claim 80 (original): The system according to claim 29, further comprising a third conduit bypassing the heat exchanger for carrying the air feed stream to the pressure swing adsorption module.

Claim 81 (new): The system according to claim 1 configured to generate mechanical power and/or a refrigeration effect by releasing the fuel from the fuel storage container.

Claim 82 (new): The system according to claim 1, further comprising at least one fuel transport device at least partially powered by energy generated by releasing the fuel from the fuel storage container.

Claim 83 (new): The system according to claim 1, further comprising at least one fuel enhancement device configured to make use of a refrigeration effect generated by releasing the fuel from the fuel storage container.

Claim 84 (new): The system according to claim 1, wherein the expander is configured to allow the fuel to expand substantially isentropically.

Claim 85 (new): The system according to claim 1, further comprising a mechanical coupling in communication with the expander.

Claim 86 (new): The system according to claim 1, further comprising an electrical coupling in communication with the expander.

Claim 87 (new): The system according to claim 1, wherein the expander comprises a multi-stage expander.

Claim 88 (new): The system according to claim 1, wherein the expander comprises a positive displacement expander.

Claim 89 (new): The system according to claim 1, wherein the expander comprises an impulse turbine.

Claim 90 (new): The system according to claim 2, wherein the expander is coupled to a coolant pump for the fuel cell.

Claim 91 (new): The system according to claim 27, further comprising a shaft mechanically coupling the device and the expander.

Claim 92 (new): The system according to claim 27, wherein the device coupled to the expander is a compressor for compressing an air feed to the oxidant gas delivery system.

Claim 93 (new): The system according to claim 27, wherein the device coupled to the expander is a blower for delivering an air feed to the oxidant gas delivery system.